UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/052,951	01/17/2002	Jaim Nulman	1390.C2/CPI/PJS	3963

32588 7590 07/22/2003

APPLIED MATERIALS, INC.
2881 SCOTT BLVD. M/S 2061
SANTA CLARA, CA 95050

EXAMINER
MCDONALD, RODNEY GLENN

ART UNIT	PAPER NUMBER
1753	7

DATE MAILED: 07/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/052,951	NULMAN ET AL.	
	Examiner	Art Unit	
	Rodney G. McDonald	1753	

-- Th MAILING DATE of this communication appears on th cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 41-74* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *60-64 and 66-73* is/are allowed.

6)☐ Claim(s) *1,41-59,65 and 74* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 65 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 65 is indefinite because it cannot be both a method and apparatus claim. It is suggested to change in line 1 "apparatus" to "method".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 74 are rejected under 35 U.S.C. 102(b) as being anticipated by Barnes et al. (U.S. Pat. 5,178,739).

Barnes et al. teach a sputter deposition system 10 in Figure 1 which includes a vacuum chamber 20, which contains a circular end sputter target 12, a hollow, cylindrical, thin, cathode magnetron target 14, a RF coil 16 and a chuck 18, which holds a semiconductor substrate 19. (Column 3 lines 39-47; Figure 1)

A sputter power supply 30 (DC or RF) is connected by a line 32 to the sputter target 12. A rf supply 34 provides power to rf coil 16 by a line 36 through a matching

network 37. Variable impedance 38 is connected in series with the cold end 17 of coil 16. A second sputter power supply 39 is connected by a line 40 to cylindrical sputter target 14. (Column 3 lines 59-65)

Power supplies 30, 39 cause atoms to be sputtered off of targets 12, 14, as is well known in the prior art. Sputter targets 12, 14 must therefore be made of the material to be deposited on the substrate, such as copper. RF coil 16 must also either be made of, or ***coated with the deposition material in order to prevent contamination of the deposited film.*** (Column 4 lines 1-7) (i.e. the coil is being sputtered to add to the deposition material)

Double Patenting

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 41 and 45 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1, 11 and 12 of prior U.S. Patent No. 6,368,469. This is a double patenting rejection.

Claims 1, 11 and 12 teach the vacuum chamber, a substrate support member, a plasma generation area, a shield having a wall which encircles the plasma generation area, a first bias able target disposed in the chamber, a sputterable coil carried

insulatively be the shield wall to couple energy inductively into the plasma generation area and positioned adjacent to the substrate support member to sputter material from the coil to the substrate. The coil has a capacitor coupled between the coil second end and ground. The capacitor maintains a bias on the coil at a level sufficient to cause said coil to be sputtered in the presence of a plasma. (See Claims 1,11 and 12)

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 41-59 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-21, 30-36 and 45-54 of U.S. Patent No. 6,368,469. Although the conflicting claims are not identical, they are not patentably distinct from each other because U.S. Pat. 6,368,469 teach in the claims the required elements of claims 41-59 of the current application.

Specifically, Claim 41 of the current application is suggested by claims 1 and 11 of U.S. Pat. 6,368,469. Claim 42 of the current application is suggested by claim 47 of U.S. Pat. 6,368,469. Claim 43 of the current application is suggested by claim 48 of U.S. Pat. 6,368,469. Claim 44 of the current application is suggested by claim 49 of

U.S. Pat. 6,368,469. Claim 45 of the current application is suggested by claim 12 of U.S. Pat. 6,368,469. Claim 46 of the current application is suggested by claim 2 of U.S. Pat. 6,368,469. Claim 47 of the current application is suggested by claim 3 of U.S. Pat. 6,368,469. Claim 48 of the current application is suggested by claim 18 of U.S. Pat. 6,368,469. Claim 49 of the current application is suggested by claim 4 of U.S. Pat. 6,368,469. Claim 50 of the current application is suggested by claim 5 of U.S. Pat. 6,368,469. Claim 51 of the current application is suggested by claim 6 of U.S. Pat. 6,368,469. Claim 52 of the current application is suggested by claim 7 of U.S. Pat. U.S. Pat. 6,368,469. Claim 53 of the current application is suggested by claim 30 of U.S. Pat. 6,368,469. Claim 54 of the current application is suggested by claim 35 of U.S. Pat. 6,368,469. Claim 55 of the current application is suggested by claim 30 of U.S. Pat. 6,368,469. Claim 56 of the current application is suggested by claim 33 of U.S. Pat. 6,368,469. Claim 57 of the current application is suggested by claim 34 of U.S. Pat. 6,368,469. Claim 58 of the current application is suggested by claim 35 of U.S. Pat. 6,368,469. Claim 59 of the current application is suggested by claim 36 of U.S. Pat. 6,368,469.

The difference between the current application and U.S. Pat. 6,368,469 (Nulman et al.) is that the current application requires the capacitor whereas not all the claims of U.S. Pat. 6,368,469 require a capacitor.

Claims 11 and 12 of U.S. Pat. 6,368,469 teach the use of a capacitor. (See Claims 11 and 12)

The motivation for utilizing a capacitor is that it allows for maintaining a bias on the coil for the coil to be sputtered. (See Claim 12)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified U.S. Pat. 6,368,469 by utilizing a capacitor as taught by U.S. Pat. 6,368,469 because it allows for sputtering the coil.

Allowable Subject Matter

Claims 60-64 and 66-73 are allowed.

Claim 65 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action .

The following is a statement of reasons for the indication of allowable subject matter:

Claims 60-64 and 66-73 are allowable over the prior art of record because the prior art of record does not teach a method of depositing material on a workpiece in a sputter deposition chamber, comprising sputtering target material onto said workpiece from a coil having a first end coupled to a signal source and a second end coupled to ground, said coil being insulatively carried by a shield wall substantially encircling a plasma generation area and positioned adjacent to and at least partially encircling said workpiece; and inductively coupling energy from said coil into said plasma generation area.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 703-

308-3807. The examiner can normally be reached on M- Th with Every other Friday off..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 703-308-3322. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9310 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Rodney G. McDonald
Primary Examiner
Art Unit 1753

RM
July 21, 2003